

PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of

Docket No: Q85504

Heiji WATANABE, et al.

Appln. No.: 10/519,084

Group Art Unit: 2812

Confirmation No.: 7332

Examiner: Not Yet Assigned

Filed: December 23, 2004

For: SEMICONDUCTOR DEVICE AND MANUFACTURING METHOD THEREOF

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT
UNDER 37 C.F.R. §§ 1.97 and 1.98

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In accordance with the duty of disclosure under 37 C.F.R. § 1.56, Applicant hereby notifies the U.S. Patent and Trademark Office of the documents which are listed on the attached PTO/SB/08 A & B (modified) form and listed herein and which the Examiner may deem material to patentability of the claims of the above-identified application.

1. H.-J. Cho et al.; "Novel Nitrogen Profile Engineering for Improved TaN/HfO₂/Si MOSFET Performance"; International Electron Devices Meeting; Technical Digest 2001; pages 655-658.
2. Hag-Ju Cho, et al.; "Structural and Electrical Properties of HfO₂ With Top Nitrogen Incorporated Layer"; IEEE Electron Device Letters; Vol. 23 No. 5, May 2002; pages 249-251.
3. Japanese Patent Application Publication No. 2002-60944, published February 28, 2002 (with English abstract).
4. Japanese Patent Application Publication No. 10-242461, published September 11, 1998 (with English abstract).

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT

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Atty. Docket No.: Q85504

5. Japanese Patent Application Publication No. 2002-164343, published June 7, 2002 (with English abstract).
6. United States Patent No. 6,365,467, issued April 2, 2002.
7. Japanese Patent Application Publication No. 2002-299607, published October 11, 2002 (with English abstract).
8. M. Koyama, et al.; "Thermally Stable Ultra-Thin Nitrogen Incorporated ZrO₂ Gate Dielectric Prepared by Low Temperature Oxidation of ZrN"; Tech. Dig. IEDM 2001; pages 459-462.
9. Japanese Patent Application Publication No. 2001-358225, published December 26, 2001 (with English abstract).
10. Japanese Patent Application Publication No. 2001-85427, published March 30, 2001 (with English abstract).
11. Japanese Patent Application Publication No. 2001-257344, published September 21, 2001 (with English abstract).
12. Japanese Patent Application Publication No. 2001-332547, published November 30, 2001 (with English abstract).
13. Japanese Patent Application Publication No. 11-261067, published September 24, 1999 (with English abstract).

One copy of each of the listed documents is submitted herewith.

The present Information Disclosure Statement is being filed: (1) No later than three months from the application's filing date; (2) Before the mailing date of the first Office Action on the merits (whichever is later); or (3) Before the mailing date of the first Office Action after filing a request for continued examination (RCE) under §1.114, and therefore, no Statement under 37 C.F.R. § 1.97(e) or fee under 37 C.F.R. § 1.17(p) is required.

In compliance with the concise explanation requirement under 37 C.F.R. § 1.98(a)(3) for foreign language documents, Applicant encloses herewith a copy of the corresponding

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT

U.S. Appln. No.: 10/519,084


Atty. Docket No.: Q85504

International Search Report, dated September 30, 2003, which cites above references 3-5 and 7 and indicates the degree for relevance found by the foreign office. Additionally, Applicant states that above reference 9 is discussed within the specification beginning at page 22, line 8.

The submission of the listed documents is not intended as an admission that any such document constitutes prior art against the claims of the present application. Applicant does not waive any right to take any action that would be appropriate to antedate or otherwise remove any listed document as a competent reference against the claims of the present application.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account. A duplicate copy of this paper is attached.

Respectfully submitted,


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WASHINGTON OFFICE

23373

CUSTOMER NUMBER

Date: September 19, 2005

Substitute for Form 1449 A & B/PTO <u>INFORMATION DISCLOSURE</u> <u>STATEMENT BY APPLICANT</u> (use as many sheets as necessary)				Complete if Known Application Number: 10/519,084 Confirmation Number: 7332 Filing Date: December 23, 2004 First Named Inventor: Heiji WATANABE Art Unit: 2812 Examiner Name: Not Yet Assigned Attorney Docket Number: Q85504	
Sheet	1	Of	1		

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No. ¹	Document Number		Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document
		Number	Kind Code ² (if known)		
		US 6,365,467	B1	04-02-2002	Joo
		US			
		US			
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		US			

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No. ¹	Foreign Patent Document			Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Translation ⁶
		Country Code ³	Number ⁴	Kind Code ⁵ (if known)			
		JP	2002-60944	A	02-28-2002	Internatl Business Mach Corp	
		JP	10-242461	A	09-11-1998	Sony Corp	
		JP	2002-164343	A	06-07-2002	Agere Systems Guardian Corp	
		JP	2002-299607	A	10-11-2002	Toshiba Corp	
		JP	2001-358225	A	12-26-2001	Agere Systems Guardian Corp	
		JP	2001-85427	A	03-30-2001	NEC Corp	
		JP	2001-257344	A	09-21-2001	Toshiba Corp	
		JP	2001-332547	A	11-30-2001	Toshiba Corp	
		JP	11-261067	A	09-24-1999	Texas Instr Inc	

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city, and/or country where published.	Translation ⁶
		H.-J. Cho et al.; "Novel Nitrogen Profile Engineering for Improved TaN/HfO ₂ /Si MOSFET Performance"; International Electron Devices Meeting; Technical Digest 2001; pages 655-658.	
		Hag-Ju Cho, et al.; "Structural and Electrical Properties of HfO ₂ With Top Nitrogen Incorporated Layer"; IEEE Electron Device Letters; Vol. 23 No. 5, May 2002; pages 249-251.	
		M. Koyama, et al.; "Thermally Stable Ultra-Thin Nitrogen Incorporated ZrO ₂ Gate Dielectric Prepared by Low Temperature Oxidation of ZrN"; Tech. Dig. IEDM 2001; pages 459-462.	

Examiner Signature	Date Considered
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*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ Applicant's unique citation designation number (optional). ² See Kind Codes of USPTO Patent Documents at www.uspto.gov, MPEP 901.04 or in the comment box of this document. ³ Enter Office that issued the document, by the two-letter code (WIPO Standard ST. 3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. ⁶ Applicant is to indicate here if English language Translation is attached.